



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/587,564

06/13/2007

Seung-Hoon Lee

KMI-0004

7176

23413 7590 10/19/2009
CANTOR COLBURN, LLP
20 Church Street
22nd Floor
Hartford, CT 06103

EXAMINER

MINSEY, JACOB T

ART UNIT

PAPER NUMBER

1791

NOTIFICATION DATE

DELIVERY MODE

10/19/2009

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

usptopatentmail@cantorcolburn.com

Office Action Summary	Application No.	Applicant(s)	
	10/587,564	LEE ET AL.	
	Examiner	Art Unit	
	JACOB T. MINSKEY	1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 June 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>2/27/2007</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 14, 21, and 22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

3. A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the rejected claims, the term "preferably" is included, which has the same effect as "such as" described above.

Art Unit: 1791

4. In the present instance, claim 14 recites the broad recitation of a ratio of 1:4 – 4:1, and the claim also recites a ratio of 1:3-3:1 which is the narrower statement of the range/limitation.

5. In the present instance, claim 21 recites the broad recitation of a weight of 1,000-1,000,000, and the claim also recites a weight of 2,000-500,000, which is the narrower statement of the range/limitation.

6. In the present instance, claim 22 recites the broad recitation of a ratio of 1:4 – 4:1, and the claim also recites a ratio of 1:3-3:1 which is the narrower statement of the range/limitation.

7. For purposes of continued examination, the narrower ranges will not be given patentable weight in each claim.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000.

Art Unit: 1791

Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

9. Claims 1-5, 11-12, 14-16, and 19-25 are rejected under 35 U.S.C. 102(e) as being anticipated by Maeda et al, USP 6,780,832.

10. Regarding claims 1 and 19, Maeda teaches a process for the treatment of a fiber material (column 14 line 48 – column 15 line 40) comprising contacting the fiber material in an aqueous medium with a chelating agent (Maeda teaches that the polymer can be combined with alkali agents and surfactants in fiber treatment, column 15 line 35 as well as the addition of chelating agents in column 13 line 41 and 45-51) and a polymer having the provided general formula [Polymer A = maleic acid(-based) polymers (or their salts), column 8 line 20, Polymer B = 3-allyloxy-2-hydroxypropanesulfonic acid, column 10 line 4] where the monomers are in a ratio of n (Polymer A) is 0-.95, m (Polymer B) is 0.05-.9, and k (optional component) is 0-.8, wherein $n+m+k = 1$ (ratio of A/B is 30/70-90/10, column 10 line 67), and wherein the weight average molecular weight is between 500 and 20,000,000 g/mol (3,000-100,000, column 9 line 14 and 1,000-10,000 column 10 line 8).

11. Regarding claim 2, Maeda further teaches that the chelating agent and the polymer are introduced as a mixture or the chelating agent and the polymer are introduced separately (column 11 lines 10-13).

12. Regarding claim 3, Maeda further teaches that the fibre material is a cellulosic fibre material comprising a chemical, mechanical or chemi-mechanical pulp or a recycled fibre material (chemical fiber, column 15 line 28).

Art Unit: 1791

13. Regarding claims 4, 5, and 25 Maeda further teaches that the treatment comprises bleaching the fibre material with an alkaline peroxide solution in the presence of the chelating agent and the polymer (column 15 line 2 and 35-40).

14. Regarding claims 11 and 20, Maeda further teaches that 11. The process according to any of claims 1 wherein in formula I n is 0.4 to 0.9, m is 0.1 to 0.5, and k is 0 to 0.5 (ratio of A/B is 90/10, column 10 line 67).

15. Regarding claims 12 and 21, Maeda further teaches that the weight average molecular weight of the copolymer is between 1,000 and 1,000,000 g/mol (3,000-100,000, column 9 line 14 and 1,000-10,000 column 10 line 8).

16. Regarding claims 14 and 22, Maeda teaches a weight ratio of the polymer to the chelating agent that is .01:1-100:1 (column 15 line 14), Which encompasses the claimed range of 1:4 to 4:1. Additionally, Example 2 teaches the addition of 0.15 g of zeolite (a chelating agent, column 21 line 62) in a pot with 5g of a 1% aqueous polymer solution (column 21 line 64). The ratio of chelating agent to polymer solution would then be 0.03:1 and the ratio of chelating agent to just the polymer (taking the 1% dilution into consideration) would be 3:1, which reads on the claimed limitations.

17. Regarding claims 15 and 23, Maeda further teaches that the polymer is a copolymer of 3-allyloxy-2-hydroxypropanesulfonic acid and at least one of acrylic acid, methacrylic acid, maleic acid, itaconic acid, or a salt thereof [Polymer A = maleic acid(-based) polymers (or their salts), column 8 line 20, Polymer B = 3-allyloxy-2-hydroxypropanesulfonic acid, column 10 line 4].

Art Unit: 1791

18. Regarding claims 16 and 24, Maeda further teaches that the chelating agent is a compound having the following general formula wherein p is 0 or an integer of 1 to 10, R.sub.3, R.sub.4, R.sub.5, R.sub.6 and R.sub.7 are independently a hydrogen atom or an alkyl chain having 1 to 6 carbon atoms and containing an active chelating ligand (represented by EDTA, column 13, line 47).

19. Claims 1, 4-6, 10, 19, and 25-26 are rejected under 35 U.S.C. 102(e) as being anticipated by Yamaguchi et al, USP 5,135,677.

20. Regarding claims 1 and 19, Yamaguchi teaches a process for the treatment of a fiber material (teaches the use of a solution for pulp bleaching, column 9 lines 25-27) comprising contacting the fiber material in an aqueous medium (column 9 lines 12-22) with a chelating agent (Yamaguchi teaches adding both a metal ion and a chelating agent with the polymer column 6 line 32 – column 7 line 18) and a polymer having the provided general formula [Polymer A = maleic acid, column 6 line 9, Polymer B = 3-allyloxy-2-hydroxypropanesulfonic acid, column 6 line 18] where the monomers are in a ratio of n (Polymer A) is 0-.95, m (Polymer B) is 0.05-.9, and k (optional component) is 0-.8, wherein $n+m+k = 1$ (ratio of A/B is 50:50 to 99.9:0.01, column 6 lines 21-31), and wherein the weight average molecular weight is between 500 and 20,000,000 g/mol (300-5000, claim 1).

21. Regarding claims 4-6 and 25, Yamaguchi further teaches that the fiber bleaching is preceded by a treatment with a chelating agent (example 81 teaches adding the chelating agent in the initial stages, and pre-treating pulp prior to bleaching, column 9 line 26).

Art Unit: 1791

22. Regarding claims 10 and 26, Yamaguchi further teaches that the fibre material comprises a recycled fibre material, and wherein the treatment further comprises deinking the recycled fiber material in the aqueous medium comprising the chelating agent and the polymer (deinking waste paper, column 9 lines 22-32).

Claim Rejections - 35 USC § 103

23. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

24. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

25. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

Art Unit: 1791

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

26. Claims 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maeda et al, USP 6,780,832.

27. Regarding claims 17 and 18, Maeda teaches that any chelating agents can be utilized as long as they do not directly damage the polymers utilized (column 13 lines 37-51), but they do not provide the same specific examples as the instant claims.

28. The Applicant also admits that it is well known in the pulp and paper industry to utilize chelating agents to remove harmful components of the solution prior to bleaching with peroxide [0002]. Applicant further states that there is a large group of chelating agents that can be utilized and have been utilized in the past [0003 and 0010].

Applicant provides a group of chelating agents that can be utilized in the instant application, and also states that all three different formulas provides are of "commercially available" chelating agents [0054-0086].

29. Furthermore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use one of the known chelating agents presented in the method taught by Maeda because one of ordinary skill in the art would have been able to carry out such a substitution to achieve the predictable result of removing harmful components from the solution/slurry. "The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results." KSR Int'l Co V. Teleflex Inc, 127 S.Ct. 1727, 82 USPQ2d 1385 (2007).

Art Unit: 1791

30. Claims 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamaguchi et al, USP 5,135,677.

31. Regarding claim 7, Yamaguchi remains as applied above, but is silent on the pH of the medium during treatment (but does teach that it is known in the art to keep the aqueous solution at a pH of 2-7 in order to yield the desired polymer, column 3 line 38).

32. It would have been obvious to one of ordinary skill in the art at the time of the invention to have determined the optimum values of the relevant process parameters through routine experimentation (and common knowledge of pulping procedures). In re Aller, USPQ 233, CCPA 1955.

33. Regarding claims 8-9, Yamaguchi remains as applied above, but does not provide details on the bleaching steps that occur after the initial treatment of the pulp. Maeda simply states that known bleaching methods occur. Yamaguchi does teach utilizing hydrogen peroxide as a polymerization catalyst, and it would have been obvious to select the same chemical for the peroxide bleaching in subsequent steps due to the teaching that the hydrogen peroxide will not have ill effects on the solution used in the pretreatment.

34. Furthermore, it would have been obvious to one of ordinary skill in the art at the time of the invention to a known bleaching agent presented in the method taught by Yamaguchi because one of ordinary skill in the art would have been able to carry out such a substitution to achieve the predictable result of bleaching the pulp to a desired level of whiteness. "The combination of familiar elements according to known methods

Art Unit: 1791

is likely to be obvious when it does no more than yield predictable results.” KSR Int’l Co V. Teleflex Inc, 127 S.Ct. 1727, 82 USPQ2d 1385 (2007).

35. Claims 7 and 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Maeda et al, USP 6,780,832 in view of Andersson et al, USP 5,658,429.

36. Regarding claims 7 and 13, Maeda provides ratios of chelating agent to polymer as discussed above, but is silent on how much total of the mixture should be utilized in the treatment.

37. In the same field of endeavor of treating/bleaching fibers with a chelating agent, Andersson teaches that the treatment with a complexing agent (which is listed as a chelating agent compound, column 3) at a pH of preferably 5-7 (column 2 line 33) in an amount of .5-5 kg/ton of dry pulp (column 3 line 39).

38. While Andersson does not teach the exact same polymer formula as expressed in claim 1, the teachings of how much complexing agent to add to the pulp to prepare it for bleaching is information that one of ordinary skill in the art at the time of the invention would have found useful and could have utilized the knowledge in the Maeda method for the benefit of using an optimum amount of material to accomplish the goal of treating the fibers prior to pulping for the most efficient results and use of capital.

Double Patenting

39. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct

Art Unit: 1791

from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

40. Claims 1-26 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 13-28, 7-8, 1-6, and 22 respectfully of copending Application No. 11/596140. Although the conflicting claims are not identical, they are not patentably distinct from each other because the only difference in the claims is the addition of requiring an alkaline earth metal compound. These compounds are commonly known in the art (as all of the cited references above mention the use of alkaline earth metals in some manner or another) and it would have been obvious to utilize these compounds in addition to the chelating agent and the polymer.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JACOB T. MINSKEY whose telephone number is (571)270-7003. The examiner can normally be reached on Monday to Friday 7:30-5:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571-272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jason L Lazorcik/
Primary Examiner, Art Unit 1791

JTM